

DOCKET NO.: ADMS-0011
Application No.: 10/567,247
Office Action Dated: April 28, 2008

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Amendments to the Drawings

The attached sheets of drawings include an additional Fig., Fig. 10. The sheets, which includes Figs1-10, replaces the original sheets including Figs 1-9.

Attachment: Replacement Sheet(s)

REMARKS

I. Objection to the Drawings:

The drawings stand objected to under 37 CFR 1.83(a). Specifically, the office action states that following features are not shown in the figures: (i) an engagement formation on the link (claim 2), (ii) a pair of lifting arrangements disposed on opposite sides of the roller (claim 16), and (iii) the impact compactor being self-propelled (claim 14). Applicant has amended the drawings to include a new Fig 10, which illustrates an engagement formation on the drag link. No new matter is added by the additional figure. In that regard, the original claims and as filed specification explicitly state that the engagement formation may be on the drag link. (*See e.g. specification* at p. 4). The features of claims 14 and 16 have been canceled. Because all of the features of the claims are shown in the figures, applicant respectfully requests withdrawal of the objection.

II. Objection to the Specification:

The office action objected to the specification for failing to provide proper headings. Applicant has added the proper headings. Accordingly, withdrawal of the objection is respectfully requested.

III. Objection to the Claims:

Claim 16 stands objected to because the word “and” before “a pair of” in line 2 should be deleted. Applicant canceled claim 16. Accordingly, withdrawal of the objection is respectfully requested.

IV. Rejections Under 35 U.S.C. § 112:

Claims 4, 11, 12, 15, and 16 stand rejected under 35 U.S.C. § 112 as being indefinite. The office action states that the word “particularly” in claims 4 and 11 renders the claims indefinite, and claims 15 and 16 have been rejected on specified grounds. The word “particularly” has been deleted from claim 4 and claims 11, 15 and 16 have been canceled. Accordingly, withdrawal of the rejection under § 112 is respectfully requested.

V. Rejections Under 35 U.S.C. § 103:

Claims 1-14 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 3,966,346 (Berrange) in view of U.S. patent no. 4,147,448 (Jeffery). Independent claim 1 has been amended to more clearly define applicant's impact compactor and now includes several limitations from other claims. None of the cited art teaches or suggests the impact compactor as claimed in claim 1.

First, the limitation of a pair of impact rollers of former claim 15 has been introduced into claim 1.

Second, claim 1 has been amended to more clearly define the type of non-round impact roller referred to, i.e. the rollers being shaped to, in use, impart under their own weight a series of compaction impacts on a ground surface over which they are displaced.

Third, claim 1 has been amended to state that the lifting arm is pivotal.

Fourth, claim 1 has been amended to further include an engagement formation on the *one of the drag link and the axle assembly carried by the drag link* and a formation on the depending lifting formation for engaging the engagement formation.

Due to the above-mentioned limitation of claim 1 to a dual roller impact compactor, the arguments below are presented in relation to a dual roller impact compactor only.

As stated in the specification, certain problems persisted in respect to the typical lifting arrangements for lifting the rollers of known dual roller impact compactor's from the ground. To recap, with reference to Figure 1, the impact compactor 1 includes a chassis structure 2, two non-round impact rollers 3 (only one shown), an axle assembly 4, a pivotal drag link 5, wheels 6, a piston/cylinder mechanism 7, and a pivot plate 8. The piston/cylinder mechanism 7 is shown fully contracted so that a maximum clearance 9 is defined between the pivot plate 8 and the drag link 5. This clearance accommodates vertical movement of the rollers 3 and the axle assembly 4 relative to the chassis structure 2, in use of the compactor 1. When the piston/cylinder mechanism 7 is fully extended, the pivot plate 8 bears against the drag link 5, the rollers 3 are raised from the ground, and the rollers 3 and chassis structure 2 are supported on the wheels 6.

The length of the piston/cylinder mechanism 7, and hence its stroke, also is limited by constraints imposed by the drag link 5 above and required ground clearance 10 below a mounting for the bottom end of the piston/cylinder mechanism 7. In order to allow for the

maximum stroke, the ground clearance 10 is minimized. In typical prior art compactors of which the applicant is aware, restraints imposed by the configuration and dimensions of the compactors dictate such a ground clearance that is inadequate, often less than 100mm.

Inadequate ground clearance 10 exposes the compactor 1 to risk of damage. The mounting for the bottom end of the piston/cylinder mechanism 7 is vulnerable to damage due to interference by obstacles, e.g. rocks in use of the impact compactor 1 or an edge of a low bed trailer during loading of the compactor 1 onto the trailer. Also, if the compactor 1 is drawn over soft ground whilst supported on its wheels 6, with the rollers raised above the ground, the wheels 6 may sag into the ground such that the said mounting is snagged by the ground and causes the compactor to become stuck.

The limited stroke of the piston/cylinder mechanism 7 also limits the clearance 9, in use of the compactor 1 with the mechanism fully contracted. Due to the limited clearance 9, it may occur that the rollers 3, upon impact on soft ground, penetrate the ground so much that they draw the drag link 5 down to impact on, or mechanically interfere with, the pivot plate 8. This may cause damage to the piston/cylinder mechanism 7 or its mountings.

There is thus an interrelation between the ground clearance 10, the size of the piston/cylinder mechanism 7, and the maximum clearance 9. This clearance 9 is required to be sufficient to minimize the risk of the mechanical interference referred to above. In practice, the problem of providing sufficient clearance 9 and 10 remained unsolved in prior art embodiments of the type of impact compactor under consideration.

To summarize, in prior art impact compactors of the type described above, the drag link defines an upper limit of the piston/cylinder mechanism, whereas a bottom limit is defined by the minimum acceptable ground clearance. These limits constitute a constraint on the length of piston/cylinder mechanism that could be used, which is translated into a limitation on the stroke of the piston/cylinder mechanism and into the clearance referred to being inadequate.

The present invention has overcome these problems completely, providing more than adequate clearance between the formation on the depending lifting formation for engaging an engagement formation provided on either the drag link or the axle assembly, when the piston/cylinder mechanism is fully contracted, and also more than adequate ground clearance between the bottom of the piston/cylinder mechanism and the ground. To achieve this, the

present invention involves providing a drag link through which a space is defined, positioning the pivotal lifting arm above the drag link, and for the piston/cylinder mechanism to extend top to bottom through the space through the drag link.

In regard to the art cited by the Office Action, the examiner states that, in light of Jeffery, it would have been obvious to one skilled in the art to modify the apparatus of Berrange so that the lifting arm is above the drag link. Applicant respectfully disagrees. The piston/cylinder mechanism is required to lift the axle assembly through expansion thereof. It is required to act between the chassis and another component to effect pivoting of the drag link. In the impact compactor claimed of claim 1, the drag link is above the chassis structure. In this context, it would not be obvious to position the lifting arm above the drag link because the drag link would then be interposed between the lifting arm and the chassis structure on which the piston/cylinder mechanism acts.

In relation to the former claim 5, in which it is claimed that the depending lifting formation of the lifting arm extends through a space provided therefor by the drag link, the examiner stated that it would be obvious to one having ordinary skill in the art to define a space through the drag link. It is submitted that a person skilled in the art would have been unlikely to have considered defining a space through the drag link, since the drag link is required to be very strong and stiff for resisting forces imposed on it by the rollers via the axle assembly. It would thus be counterintuitive for a person skilled in the art to consider defining a space through the drag link. The drag link of the impact compactor of the invention required substantial development and the use of very high strength steel to achieve the required strength and stiffness.

Furthermore, the limitation of claim 1 to dual roller impact compactors diminishes, in a sense, the relevance of Jeffery and Berrange, which relate to single roller impact compactors only. A dual roller impact compactor requires a drag link with torsion stiffness, whereas a single roller impact compactor requires two opposite drag links that are not required to have torsion stiffness. The impact compactor of claim 1 further applies only to a pivotal drag link. Figure 17 of Jeffery, which was referred to in this regard by the examiner, does not include any pivotal drag link. It is thus submitted that, when faced with the clearance problem referred to above, a person skilled in the art would not have looked to Jeffery for a solution. The solution of the present invention, which involves defining a space through a

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pivotal drag link, would thus not have been obvious from the combination of Jeffery and Berrange. Accordingly, it would not have been obvious to a person skilled in the art to rearrange the components of Jeffery and Berrange to arrive at the impact compactor of claim 1.

While several amendments were made to the pending claims, these amendments do not limit applicant's ability to seek broader claims and/or to seek other aspects of applicant's invention in continuation applications.

For the foregoing reasons, applicant submits that claim 1 (and claims 2-5, 9 and 13 which depend therefrom) are in condition for allowance. Accordingly, applicant respectfully requests a Notice of Allowance for the pending claims. If the examiner determines that a teleconference would further the prosecution of this case, she is invited to telephone the undersigned at her convenience.

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